

**REMARKS**

Claim 1 stands rejected under 35 USC 112, second paragraph, based on a lack of antecedent basis for the claimed “said intermetallic compound.” Applicants have overcome this rejection by amending claim 1 to recite “wherein an intermetallic compound of said intermetallic heat spreader,” thereby providing a proper antecedent basis for the intermetallic compound.

Claims 1, 11, 12, 16 and 17 stand rejected under 35 USC 103(a) on Bernier (U.S. Patent No. 6,069,023) in view of Fan (U.S. Patent No. 6,800,948). Applicants respectfully traverse this rejection.

Claim 1 recites “an intermetallic heat spreader fixed to a back side of said semiconductor die.” This feature is not disclosed or suggested by either Bernier or Fan, alone or in combination. Fan discloses only a “silicon heat sink,” while Bernier, as conceded by the Examiner, discloses only an aluminum or metal alloy heat sink.

As previously argued by applicants, an intermetallic compound, as disclosed and defined at least at paragraph [0024] of applicants’ specification is a chemical compound based on a definite atomic formula. Furthermore, an intermetallic compound is defined as a stoichiometric combination of metallic ions that form a bonded matrix of compounds. (Examples of intermetallic compounds are shown in Appendix A of applicants’ specification.) In contrast, an aluminum alloy or a metal alloy is merely a blend or mixture of metals wherein the metals are NOT chemically bound to one another. The Examiner’s assertion that an aluminum alloy is an intermetallic compound is in contradiction to applicants’ specification, and the Examiner has not provided any evidence to support his assertion that an aluminum alloy is an intermetallic compound.

Accordingly, as previously argued, in light of the common definition of an intermetallic compound, as supported in applicants’ own specification, Bernier does not disclose or suggest an intermetallic heat spreader, and claim 1 is therefore allowable.

Furthermore, even if an aluminum alloy was an intermetallic compound, which it is not, the combination of Bernier and Fen is improper. Bernier discloses a metal heat sink while Fen discloses a silicon heat sink. There is no suggestion in the references that would have led one of ordinary skill in the art at the time of the invention to believe that the metallic heat sink of Bernier could be formed having the modulus of elasticity of the silicon heat sink of Fen, nor is there a motivation to try to create such a heat sink. One of ordinary skill in the art would have been motivated to use either the heat sink of Bernier or the heat sink of Fen. Any motivation to so fundamentally change the composition of the disclosed heat sinks is necessarily a product of the Examiner's impermissible hindsight.

Additionally, there is no evidence that it is possible to form an aluminum alloy heat sink having a modulus of elasticity of at least the modulus of elasticity of a semiconductor die to which it is attached, as recited in claim 1.

Claim 1 is therefore allowable. Claim 16 recites features substantially similar to those discussed above with regard to claim 1. Claim 16 is therefore allowable for at least the same reasons as claim 1. Claims 11, 12 and 17 depend from allowable claims and are allowable due at least to their respective dependencies.

Claims 2-10 and 13-15 stand rejected under undeterminable grounds. Applicants therefore respectfully traverse the rejection. The Examiner states that "claims 2-10 and 13-15 are rejected similar to the previous Office Action." Applicants are uncertain as to what this means. In the previous Action, claims 2-10 and 13-15 stand variously rejected under combinations including Terpstra and Utagikar, art which applicants have previously overcome. Applicants are therefore unable to meaningfully address the Examiner's rejection of these claims, except to note that claims 2-10 and 13-15 depend from allowable claims and are allowable due at least to their respective dependencies.

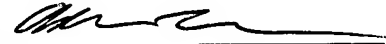
Accordingly, should the Examiner not find applicants' above remarks persuasive, applicants respectfully request a new non-final Action clearly identifying the grounds of rejection of claims 2-10 and 13-15.

Applicants solicit an early action allowing the claims.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief, including extensions of time, and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **618902001820**.

Dated: January 8, 2007

Respectfully submitted,

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